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CLAIMS

1. A modified natural rubber characterized by graft-polymerizing natural rubber latex with a polar group-containing monomer at a grafting ratio of 0.01-5.0% by mass and then coagulating and drying.
2. A modified natural rubber according to claim 1, wherein the polar group is at least one selected from the group consisting of amino group, imino group, nitrile group, ammonium group, imido group, amido group, hydrazo group, azo group, diazo group, hydroxyl group, carboxyl group, carbonyl group, epoxy group, oxycarbonyl group, sulfide group, disulfide group, sulfonyl group, sulfinyl group, thiocarbonyl group, nitrogen-containing heterocyclic group and oxygen-containing heterocyclic group.
3. A method of producing a modified natural rubber, characterized in that a polar group-containing monomer is added to natural rubber latex and grafted at a grafting ratio of 0.01-5.0% by mass through an emulsion polymerization and then the resulting polymer is coagulated and dried.
4. A method according to claim 3, wherein the polar group is at least one selected from the group consisting of amino group, imino group, nitrile group, ammonium group, imido group, amido group, hydrazo group, azo group, diazo group, hydroxyl group, carboxyl group, carbonyl group, epoxy group, oxycarbonyl group, sulfide group, disulfide group, sulfonyl group, sulfinyl group, thiocarbonyl group, nitrogen-containing heterocyclic group and oxygen-containing heterocyclic group.
5. A rubber composition comprising a modified natural rubber, which is obtained by graft-polymerizing natural rubber latex with a polar group-containing monomer and then coagulating and drying, and carbon black and/or silica.
6. A rubber composition according to claim 5, wherein a grafting ratio of the polar group-containing monomer is 0.01-5.0% by mass per the natural rubber latex.
7. A rubber composition according to claim 6, wherein the grafting ratio is 0.1-3.0% by mass per the natural rubber latex.
8. A rubber composition according to claim 5, wherein the polar group is at least one selected from the group consisting of amino group, imino group,

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nitrile group, ammonium group, imido group, amido group, hydrazo group, azo group, diazo group, hydroxyl group, carboxyl group, carbonyl group, epoxy group, oxycarbonyl group, sulfide group, disulfide group, sulfonyl group, sulfinyl group, thiocarbonyl group, nitrogen-containing heterocyclic group and oxygen-containing heterocyclic group.

9. A pneumatic tire characterized by applying a rubber composition as claimed in claim 5 to a tire constituting member.

10. A modified natural rubber latex characterized by adding a tin-containing monomer to natural rubber latex and graft-polymerizing them.

11. A modified natural rubber latex according to claim 10, wherein the tin-containing monomer is at least one selected from the group consisting of allyl tri-n-butyl tin, allyl trimethyl tin, allyl triphenyl tin, allyl tri-n-octyl tin, (meth)acryloxy n-butyl tin, (meth)acryloxy trimethyl tin, (meth)acryloxy triphenyl tin, (meth)acryloxy n-octyl tin, vinyl tri-n-butyl tin, vinyl trimethyl tin, vinyl triphenyl tin and vinyl tri-n-octyl tin.

12. A modified natural rubber latex according to claim 10, wherein a grafting ratio of the tin-containing monomer is 0.01-10.0% by mass per a rubber component of the natural rubber latex.

13. A modified natural rubber characterized by adding a tin-containing monomer to natural rubber latex and graft-polymerizing them and then coagulating and drying.

14. A modified natural rubber according to claim 13, wherein the tin-containing monomer is at least one selected from the group consisting of allyl tri-n-butyl tin, allyl trimethyl tin, allyl triphenyl tin, allyl tri-n-octyl tin, (meth)acryloxy n-butyl tin, (meth)acryloxy trimethyl tin, (meth)acryloxy triphenyl tin, (meth)acryloxy n-octyl tin, vinyl tri-n-butyl tin, vinyl trimethyl tin, vinyl triphenyl tin and vinyl tri-n-octyl tin.

15. A modified natural rubber according to claim 13, wherein a grafting ratio of the tin-containing monomer is 0.01-10.0% by mass per a rubber component of the natural rubber latex.

16. A method of producing a modified natural rubber latex, characterized in that a tin-containing monomer is added to natural rubber latex and grafted through an emulsion polymerization.

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17. A method according to claim 16, wherein the tin-containing monomer is at least one selected from the group consisting of allyl tri-n-butyl tin, allyl trimethyl tin, allyl triphenyl tin, allyl tri-n-octyl tin, (meth)acryloxy n-butyl tin, (meth)acryloxy trimethyl tin, (meth)acryloxy triphenyl tin, (meth)acryloxy n-octyl tin, vinyl tri-n-butyl tin, vinyl trimethyl tin, vinyl triphenyl tin and vinyl tri-n-octyl tin.

18. A method according to claim 16; wherein a grafting ratio of the tin-containing monomer is 0.01-10.0% by mass per a rubber component of the natural rubber latex.

19. A method of producing a modified natural rubber, characterized in that a tin-containing monomer is added to natural rubber latex and grafted through an emulsion polymerization, and then the resulting polymer is coagulated and dried.

20. A method according to claim 19, wherein the tin-containing monomer is at least one selected from the group consisting of allyl tri-n-butyl tin, allyl trimethyl tin, allyl triphenyl tin, allyl tri-n-octyl tin, (meth)acryloxy n-butyl tin, (meth)acryloxy trimethyl tin, (meth)acryloxy triphenyl tin, (meth)acryloxy n-octyl tin, vinyl tri-n-butyl tin, vinyl trimethyl tin, vinyl triphenyl tin and vinyl tri-n-octyl tin.

21. A method according to claim 19, wherein a grafting ratio of the tin-containing monomer is 0.01-10.0% by mass per a rubber component of the natural rubber latex.

22. A rubber composition comprising a modified natural rubber as claimed in claim 13 and carbon black.

23. A modified natural rubber latex characterized by adding an alkoxysilyl group-containing monomer to natural rubber latex and graft-polymerizing them.

24. A modified natural rubber latex according to claim 23, wherein a grafting ratio of the alkoxysilyl group-containing monomer is 0.01-10.0% by mass per a rubber component of the natural rubber latex.

25. A modified natural rubber characterized by adding an alkoxysilyl group-containing monomer to natural rubber latex and graft-polymerizing them and then coagulating and drying.

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26. A modified natural rubber according to claim 25, wherein a grafting ratio of the alkoxysilyl group-containing monomer is 0.01-10.0% by mass per a rubber component of the natural rubber latex.

27. A method of producing a modified natural rubber latex, characterized in that an alkoxysilyl group-containing monomer is added to natural rubber latex and grafted through an emulsion polymerization.

28. A method according to claim 27, wherein a grafting ratio of the alkoxysilyl group-containing monomer is 0.01-10.0% by mass per a rubber component of the natural rubber latex.

29. A method of producing a modified natural rubber, characterized in that an alkoxysilyl group-containing monomer is added to natural rubber latex and grafted through an emulsion polymerization and then the resulting polymer is coagulated and dried.

30. A method according to claim 29, wherein a grafting ratio of the alkoxysilyl group-containing monomer is 0.01-10.0% by mass per a rubber component of the natural rubber latex.

31. A rubber composition comprising a modified natural rubber as claimed in claim 25 and silica.